



## Preliminary Report Form for New Small Production Wells for Small Community Water Systems December 2007

PROJECT NAME \_\_\_\_\_

TOWN/CITY \_\_\_\_\_ DATE \_\_\_\_\_

EPA ID # \_\_\_\_\_

**PURPOSE:** This form, when complete, will provide the information required for small well siting preliminary reports under Env-Dw 301, *Small Production Wells for Small Community Water Systems*. You don't have to use this form; however, based on experience, NHDES has found that use of the form speeds the well siting and approval process. If you prefer to produce an original report, remember to provide **all the information** required under the rules, and NHDES recommends that you use this form as a checklist to help ensure your report is complete. Helpful information and reminders are provided throughout the form and are printed in *italics*. Copies of this form and other useful publications may be found at [www.des.nh.gov/DWSPP/newcomm.htm](http://www.des.nh.gov/DWSPP/newcomm.htm).

### INSTRUCTIONS:

A. Obtain copies of the following well siting materials from the NHDES's Public Information Center (603) 271-2975 or from the NHDES website above. Additional copies of this reporting form are also available. These materials will help you complete this form.

1. Administrative Rule, Env-Dw 301, *Small Production Wells for Small Community Water Systems, October 2007*.
2. The well siting guide, *The Applicant's Toolkit for Siting New Small Community Wells in New Hampshire, November 2007*.
3. Administrative Rule, Env-Ws 372, *Design Standards for Small Community Water Systems, November 2005*.  
(Small community water systems are subject to design criteria under Env-Ws 372. This document assists you in making sure the new well project will meet those criteria.)
4. The pumping test guide, *A Field Guide for Pumping Test Operators*.
5. Administrative Rule, Env-Ws 390, *Water Conservation Rules*, and *Water Conservation Plan Form* ([www.des.nh.gov/h2o\\_conservation.htm](http://www.des.nh.gov/h2o_conservation.htm))

B. Contact NHDES staff to request a GIS map and inventory of known and potential contamination sources and water supplies for your site. The staff person will need a location map of your site (usually a USGS map or equivalent). This may be faxed to (603) 271-0656, to the attention of "GIS Map & Inventory Request." When you receive the map and inventory contact NHDES staff at (603)

271-8808 to schedule a file review. When you arrive at NHDES for your file review, sign in with the receptionist and tell her you are there to see the Waste Management Division file librarian. Generally, only active known contamination sites need be reviewed. File information is required for Section 3.4 of this form. For further instructions on conducting a file review, refer to the guidance document.

- C. Review the well siting rules and guidance materials listed above. You should use these materials to assess your water system design and site specific well siting needs.
- D. Complete the form by answering all questions and providing appropriate attachments. Answer the questions from top to bottom, unless instructed to skip to another section. Helpful information and reminders are provided throughout the form and are printed in *(parentheses and italics)*.
- E. It is very important to recognize that an incomplete form, like an incomplete preliminary report, **will be returned** for completion with the missing sections highlighted. NHDES reviews submissions in the order they are received. So, an incomplete form delays the review process until a completed submission is received.
- F. If you need to add additional pages for clarification or continuation of information, please include them directly after the page containing the pertinent section.
- G. Before submitting, review the form to ensure all questions are answered and all attachments are included. When complete, submit to:

New Community Well Sitings  
NHDES Drinking Water & Groundwater Bureau  
PO Box 95  
Concord, NH 03302-0095

For help with this form or other community well siting concerns, call NHDES at (603) 271-2947.

Information contained in this form is current as of October 2007. Statutory or regulatory changes that may occur after October 2007 may cause part or all of the information to be invalid. If there are any questions concerning the status of the information please contact NHDES at (603) 271-2947.

## Section 1.0 GENERAL INFORMATION

*(This section asks you to identify the people and companies responsible for the well siting and water system and to describe the well site. This information will help ensure clear communication about the well siting.)*

### 1.1 Project Contacts:

**1.1a Project Contact.** *(Person completing this form? This person must have a PE, PG, water well contractor, or pump installer license or a water system operator certification.)*

Name \_\_\_\_\_

Address \_\_\_\_\_

Company \_\_\_\_\_

Phone Number \_\_\_\_\_

License/Certification Type & Number \_\_\_\_\_

**1.1b Project Owner.** *(Who currently owns the proposed water system and well site?)*

Name \_\_\_\_\_

Address \_\_\_\_\_

Company \_\_\_\_\_

Phone Number \_\_\_\_\_

**1.1c** Will the person named above retain ownership of the water system after well siting approval is obtained?

YES\_\_\_ NO\_\_\_

If **YES**, got to (1.2) below.

If **NO**, identify the future water system owner:

Future Owner \_\_\_\_\_

Address \_\_\_\_\_

Company \_\_\_\_\_

Phone \_\_\_\_\_

1.1d. Describe when and how ownership will be transferred to this future owner.

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1.2 Has a Water Conservation Plan, in accordance with Env-Ws 390, *Water Conservation Rules*, been submitted with this application? *(It is advisable to submit a draft Water Conservation Plan to NHDES prior to public notification.)*

YES \_\_\_\_\_ NO \_\_\_\_\_

*(If **YES** go to Section 1.3. If **NO**, stop and complete the Water Conservation Plan form found at the back of this document.)*

### 1.3 Site Location Maps and Sketch :

**1.3a. Site Map.** *(Show the well location on a US Geological Survey [USGS] map, scaled to 1:24,000.)*

Name and Date of USGS Map \_\_\_\_\_

**1.3b. Tax Map.** *(Show the well location on the town's tax maps and identify the map and lot numbers.)*

Town tax map and lot number \_\_\_\_\_

**1.3c. Location Description.** *(EPA requires NHDES to report the location of each well in reference to the pump station. Please provide a description in this format. For example, Well # 1 is 150 feet SW of the pumphouse.)*

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**1.3d. Site Sketch.** Provide a sketch **with a scale of 1"=100' or larger**, showing the well location and **everything** within at least 1,000 feet of the new well. Incorporate historic, existing and proposed land uses, including: *(Include contours and all stormwater drainage structures.)*

- |                       |                  |                   |              |
|-----------------------|------------------|-------------------|--------------|
| •livestock areas      | •surface waters  | •wetlands         | •flood plain |
| •foot paths           | •gravel roads    | •easement areas   | •fuel tanks  |
| •homes                | •driveways       | •landscaped areas | •fences      |
| •sand/soil/wood piles | •farm animals    | •protected lands  | •trails      |
| •mowed areas          | •roads (and ROW) | •parking          | •dumpsters   |
| •recreational areas   | •farm fields     | •buildings/sheds  | •storage     |
| •pump houses          | •ball fields     | •other wells      | •salt piles  |
| •septic systems       |                  |                   |              |

*(Please Note: Sections 3.2b, 3.3b, 3.3c, 3.4a, and 4.2c require additional information that should be added to this sketch.)*

## Section 2.0 SOURCE WATER REQUIREMENTS

*(This information is needed to help ensure the well siting work will meet the intended purpose and the pumping test is designed appropriately.)*

### 2.1 Water System:

Is this a new water system? YES \_\_\_ NO \_\_\_

(If **YES**, go to Section 2.2)

(If **NO**, go to Section 2.3)

### 2.2 Proposed (New) Water Systems:

2.2a. Has Conceptual Approval been obtained from the NHDES?

YES \_\_\_ NO \_\_\_

If **YES**, go to (2.2b) below

If **NO**, contact DWGB at 271-2513 and **obtain concept approval** before submitting this form.

#### 2.2b. Source Capacity Requirements:

2.2b.1 What is the total source capacity required for the system under Env-Ws 372.12? *(Please note that Env-Ws 372.10(d) requires irrigation be included in source capacity estimates. If **landscape irrigation** is planned for this project, this use **must** be included in your source capacity calculations, even if a separate well and system will be installed for irrigation purposes. Irrigation water use can be calculated using 700 gpd per structure if 'smart irrigation' controllers are proposed. Otherwise, use 1,200 gpd per structure to estimate irrigation water use. Use Worksheet A to ensure your calculations are complete and explain how those calculations were developed. Note that **source capacity does not equal design flow.**)*

\_\_\_\_\_ gallons/day (gpd).

*(If the source capacity requirements for the new system exceed 57,600 gpd, **STOP!** This application is subject to the requirements of the Large Groundwater Withdrawal Rules. Contact NHDES for further guidance.)*

2.2b.2 How will source capacity requirements be met? Complete Table 2-1 on the next page. *(How many wells are planned, are they bedrock or overburden, and what yields are anticipated for each well? System source capacity equals the sum of the permitted production volumes of all wells, new and existing. Permitted production volume of a new well is the maximum amount that can be withdrawn over any 24-hour period and is demonstrated by a constant rate pumping test.)*

2.2b.3. Describe how the wells will be operated to meet the Env-Ws 372 source capacity requirements? *(For example, simultaneous, lead-lag, or main and back-up.)*

\_\_\_\_\_

**Table 2-1, PROPOSED WELLS (For a New Water System)**

Well Name and Number ( <i>ex. Bedrock Well 1</i> )	Well Type ( <i>Bedrock or Overburden</i> )	Proposed Pumping Rate (gpm)	Proposed Permitted Production Volume (gpd)

*(If you have a **NEW** water system and have answered all the questions in Section 2.2 above, **Go To Section 3.0**, otherwise continue to Section 2.3.)*

**2.3 Existing Water System:**

**2.3a** Type of New Well (*check one*)

☐ Installation of a new well(s) (**Complete Sections 2.3-7.0**)

☐ Reactivation of an inactive well(s) (**Complete Sections 2.3, 3.2, 4.0-6.0**)

☐ Increasing the approved maximum daily withdrawal or permitted production volume of existing well(s) (**Complete Sections 2.3-7.0**)

☐ Deepening or hydrofracture to regain lost capacity of an existing well(s) (**Complete Sections 2.3b-f, 3.1-3.3, & 4.0-6.0**)

☐ Replacement of an existing well. (**Complete Sections 2.3b-f, 3.0-7.0**)

**2.3b Type of Need** (*Why does the system need a new well? Check all that apply.*)

☐ To obtain approval for an increase in users. (*a system expansion*)

☐ To meet current demand or design requirements. (*a system deficiency*) Explain.

☐ To meet unusual demands. (*more than the standard flows*) Explain.

☐ To supplement declining yields of existing wells.

☐ To replace an existing well with substandard water quality or yield. Explain why a replacement well is needed.

☐ To install a new well for blending due to substandard water quality in an existing well. Explain.

**2.3c Water Shortages:**

**2.3c.1** Has the water system experienced any water shortages?

YES \_\_\_ NO \_\_\_

If **NO**, go to (2.3d.) below.

If **YES**, describe the events and measures taken, include dates, and provide a general assessment of where and how customers are using water. Attach water meter records for the well(s) for the past two years. Please provide daily meter records that show peak use, if available.

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**2.3c.2** Were water conservation measures implemented?

YES \_\_\_\_\_ NO \_\_\_\_\_

If **YES**, describe the measures taken.

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**2.3c.3** Will it be necessary to connect a new well to the water system prior to final approval due to a water system emergency?

YES \_\_\_\_\_ NO \_\_\_\_\_

If **YES**, describe the emergency.

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**2.3d.** Describe the existing system.

How many wells does the system have (*active & inactive*)? \_\_\_\_\_

How many wells are being used now? \_\_\_\_\_

How many of the existing wells were constructed after July 1998? \_\_\_\_\_

Specify which wells were constructed after July 1998. \_\_\_\_\_

How many service connections does the system have? \_\_\_\_\_

What type(s) of use(s) does the system serve (*refer to Env-Ws 372.10 to identify use type*)?

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**2.3e.** What is the total source capacity required for the existing system under Env-Ws 372.12?

*(Please use worksheet A to ensure calculations are complete and describe how those calculations were developed. If **landscape irrigation** is planned for this project, or already exists at the site, this use **must** be included in your source capacity calculations.)*

Total Source Capacity Required under Env-Ws 372 = \_\_\_\_\_ gallons/day

**2.3f.** Are more service connections proposed?

YES \_\_\_ NO \_\_\_

If **NO**, go to (2.3g.) below.

**2.3f.1** If the answer to 2.3f above is **YES**, then how many new connections are proposed? \_\_\_\_\_  
(Go to 2.3f.2.)

**2.3f.2.** What is the total source capacity required for the system under Env-Ws 372 after the expansion?

Total Source Capacity Required for the expanded system = \_\_\_\_\_ Gallons/Day

### 2.3g. Number and Operation of Existing Wells.

**2.3g.1** Describe the existing wells in Table 2-2 and provide well logs (*Well Completion Report, if available*) for each well. Document the **maximum sustainable capacity** of each well. (*This is the maximum rate, in gpm, at which the well can presently operate on a continuous, long-term basis, without running out of water. Include wells that will be replaced, reactivated, or improved to regain lost capacity by deepening, increasing the pumping rate, or by hydrofracture.*) Attach extra sheets as needed.

**Table 2-2, EXISTING WELLS** (*Show all well locations on the site sketch in Section 1.3d.*)

Well Name or EPA Source ID Number/ Date Installed or Well Completion Report # <i>(Include wells not currently in use that will be reactivated or improved)</i>	Current Use		Proposed ( <i>Improved</i> ) Use	
	Pumping Rate (gpm)	Maximum Total Daily Withdrawal or Permitted Production Volume (gpd)	Pumping Rate (gpm)	Maximum Total Daily Withdrawal or Permitted Production Volume (gpd)

**2.3g.2** Describe in Table 2-3 how the maximum sustainable capacity was determined for each well. (*For example, water meter records, sanitary survey reports, driller's log, pumping test report, etc.*)

**Table 2-3, CAPACITY**

Well Name/Number	Description of How Maximum Sustainable Capacity was Determined

### 2.3h Number and Operation of Proposed (*New*) Wells

**2.3h.1** Describe proposed wells in Table 2-4. (*Show all proposed well locations on the site sketch in Section 1.3d.*)

**Table 2-4, PROPOSED WELLS (New Wells for an Existing Water System)**

Well Name and Location	Well Type, Bedrock or Overburden	Proposed Use	
		Maximum Pumping Rate (gpm)	Proposed Permitted Production Volume (PPV) (gpd)

**2.3i. Meeting Source Capacity Requirements.**

*(If the PPVs of all the system wells constructed after July 1998 **PLUS** the proposed PPVs of the new wells are greater than 57,600 gpd, **STOP!** This application is subject to the requirements of the Large Groundwater Withdrawal Rules. Contact NHDES for further guidance.)*

**Section 3.0 SOURCE WATER PROTECTION**

*(This information is needed to evaluate the appropriateness of the well site based on land uses.)*

**3.1 Land Uses in Immediate Area**

**3.1a. Historic Land Uses.** Describe historic use(s) *(a 50-year history)* of the well site property within at least 500 feet of the new well. List sources of information.

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**3.1b. Existing Land Uses.** Describe the existing land use(s) on the property within at least 500 feet of each new well.

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**3.1c. Proposed Land Uses.** Describe proposed use(s) of the property within at least 500 feet of each new well. *(Include any activity listed in Section 1.3d.)*

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**3.1d. Land Uses and Potential Sites.** Based on land uses, describe why each well site was chosen over other possible sites. If there are other possible sites on the property explain, in general, why they weren't chosen. If there are none, say so. *(Wells tend to be located in areas where buildings and septic systems are not allowed. These areas are often also inappropriate for wells due to wetland and surface water proximity.)*

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**3.1e. Tax Map/Site Sketch.** Do all the land uses and possible sites described above appear on the site sketch in Section 1.3d?

YES \_\_\_\_ NO \_\_\_\_

If **YES**, go to Section 3.2.

If **NO**, return to the site sketch and add this information before going on to Section 3.2.

### **3.2 Surface Water and Floodplain**

**3.2a. Setback from floodplain.** *(This information must be identified using the Federal Emergency Management Flood Hazard Maps. These maps can be obtained from the location town or online at [www.fema.gov/hazard/flood/index.shtm](http://www.fema.gov/hazard/flood/index.shtm).)*

**3.2a.1.** Is the well site in a 100-year flood plain? YES \_\_\_\_ NO \_\_\_\_

If **YES**, What is the flood elevation? \_\_\_\_\_

What is the elevation of the well site? \_\_\_\_\_

What will be the final wellhead elevation? \_\_\_\_\_

How were these elevations determined? \_\_\_\_\_

If **NO**, *(If the well site is not in a 100-year floodplain)* then about how far is the well site from the nearest floodplain? \_\_\_\_\_ Feet

**3.2a.2** Attach copies of the relevant portions of the Flood Hazard Map (formerly the Flood Insurance Rate Map) or any engineering calculations or surveyed information used to identify floodplain locations and elevations in relation to the proposed well, if a Flood Hazard Map is not available.

### **3.2b. Setback from surface water.**

How far away is the nearest surface water or persistent wetland? \_\_\_\_\_ *(Surface water includes streams, brooks, ponds, drainage ditches, detention ponds, fire ponds or lakes. A persistent wetland is one that is flooded for at least 30 consecutive days. New wells must be located at least 50 feet from surface water or wetlands.)*

Describe the nature of the surface water or wetland. Describe all other surface waters and wetlands in the immediate area of the proposed well(s). Include distances. *(Be prepared to sample during the pumping test for a microscopic particulate analysis if a proposed new overburden well is within 100 feet of a surface water or wetland or if a proposed new bedrock well is within 200 feet of a surface water or wetland. The location and extent of all surface waters and wetlands should be shown accurately on the map required in Section 1.3. In some instances wetland delineation by a New Hampshire- certified wetland scientist will be required.)*

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### 3.3 Sanitary Protective Area

#### 3.3a. Sanitary Protective Area (SPA) Radius.

What is the length of the sanitary protective area (SPA) radius for each well? (Complete Table 3-1 on the next page for each new well. The size of the SPA depends on the proposed permitted production volume(s) [PPV] of the well(s). Match the proposed PPV for each well to the SPA radius in the table below. **If more than one well is in one SPA, then the SPA radii for those wells will be based on the combined PPV for those wells. Please note, each well must have a separate SPA.** The SPA for each well is a circle, centered on the well, with an appropriately identified radius. Note the SPAs on the site sketch required in Section 1.3.)

#### SANITARY PROTECTIVE AREA RADII

<u>Permitted Production Volume (gal/day)</u>	<u>Radius</u>
less than 14,400	150 feet
14,401 to 28,800	175 feet
28,801 to 57,599	200 feet

**3.3b.** Provide a site sketch of the SPA(s) showing the well location, SPA, and SPA radius for each well. (You may use the map provided in Section 1.3d.)

**Table 3-1, SANITARY PROTECTIVE AREA RADII**

Well Name/Number	Proposed Permitted Production Volume	Radius

**3.3c. Sanitary Protective Area Land Use Evaluation.** Is all the land inside the SPA in a natural, untouched state and will it stay that way after build out of the project?

YES\_\_\_ NO\_\_\_

If **NO**, show **all** land uses, alterations, and activities (See Section 1.3d, for a listing of these types of activities.) on the site sketch in Section 3.3b and provide a schedule for removal of all uses. (If any land uses not required for operation and maintenance of the well cannot be removed, the system must obtain a waiver, see Worksheet B for a waiver application.)

#### 3.3d. Control of Sanitary Protective Area.

Does the water system own the land in the SPA?

YES\_\_\_ NO\_\_\_

If **YES**, identify the recorded deed book and page number(s), county name and date(s) of record and provide tax maps.

Deed No. \_\_\_\_\_

County \_\_\_\_\_ Date \_\_\_\_\_

If **NO**, does the water system intend to gain control by purchasing the land or getting a land use easement?

YES\_\_\_ NO\_\_\_

If **NO**, the water system must obtain a waiver for those portions they will not own or control through easements. *(See Worksheet B for a waiver application.)*

If **YES**, attach a copy of the proposed or recorded easement language and describe when the easement will be recorded, if pertinent. *(Recorded easements must accompany the final report.)*

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### **3.4 Preliminary Wellhead Protection Area (WHPA)**

**3.4a.** Draw the Preliminary Wellhead Protection Area on the USGS map in Section 1.3a, or submit a copy of the GIS Map provided by NHDES depicting the WHPA. *(The Preliminary Wellhead Protection Area or **WHPA** is a circle, centered on the well, with a 4000-foot radius.)*

#### **3.4b. Collection of Information**

**3.4b.1** Have you obtained from the NHDES a GIS map and inventory of the WHPA that is less than 90 days old? *(Submit a copy of the GIS Map and Inventory with this form.)*

YES\_\_\_ NO\_\_\_

If **NO**, do not complete any more of this form until you have an updated inventory and map.

**3.4b.2** Have you completed a windshield survey of the WHPA, including a review of municipal records?

YES\_\_\_ NO\_\_\_

If **NO**, see NHDES guidance on completing a windshield survey. **Do not complete any more of this form until you have completed a windshield survey**

If **YES**, complete and attach a copy of the windshield survey worksheet found in the *Applicant's Toolkit* and at the end of this form *(Worksheet C)*.

#### **3.4c. Inventory Review.** Using the information collected above *(in 3.4b)* answer the following.

**3.4c.1** Are public or private wells located within 1,000-feet of the water system wells? *(All developed lots not served by a public water system should be identified as having a private well.)*

YES\_\_\_ NO\_\_\_

If **YES**, how many? \_\_\_\_\_ *(Show private well locations on the tax map provided in Section 1.3b.)*

**3.4c.2** Provide a list of all public and private well owners within 1,000 feet of the proposed well(s). *(List names, addresses, and lot numbers.)*

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**3.4c.3** Are there any active known contamination sources within the WHPA for the well?  
(*Projects listed as "inactive" or "closed" do not require a file review.*)

YES\_\_\_ NO\_\_\_

If **YES**, how many? \_\_\_\_\_

If **NO**, go to Section 4.0, Pumping Test Proposal.

**3.4c.4** Have NHDES files for active known contamination sources been reviewed?

YES\_\_\_ NO\_\_\_

If **NO**, see the *Applicant's Toolkit* for guidance on conducting a file review. **Do not complete any more of this form until you have completed any necessary file review.**

If **YES**, attach the pertinent file review information.

File Review completed by

\_\_\_\_\_

Date completed \_\_\_\_\_

**3.4c.7** Based on the file review findings is there an active known contamination site that might affect the water quality of any of your wells.

YES\_\_\_ NO\_\_\_

If **YES**, propose work to evaluate the potential impact on your well(s). (*For example, pumping the well longer and taking more water quality samples and/or monitoring or sampling other wells during the pumping test.*)

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

If **NO**, (*If there is an active known source but you don't believe it can affect your well(s)*), then explain why the contamination is not a threat to your well(s). Support your explanation with documentation. (*Such as groundwater flow maps.*)

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

#### **Section 4.0 PUMPING TEST PROGRAM PROPOSAL**

NHDES experience shows that often there are discrepancies between the pumping test proposal and what happens during the test. Sometimes this means the applicant has had to repeat the test. To **avoid repeating the pumping test**, NHDES asks that a **complete description** of the pumping test proposal be provided. (*See Env-Dw 301 and the Field Guide for Pumping Test Operators for a discussion of pumping test design and requirements.*)

#### 4.1 Test Performer(s)

Usually several people are involved in the pumping test operations and planning. Please list below all individuals or companies who will participate in performing the pumping test.

**4.1a** Who is responsible for designing and directing the pumping test and making decisions during the test? *(Such as making sure the test is conducted as approved, including preliminary report approval conditions from NHDES, that the water is discharged in the approved location, that a constant pumping rate is maintained, that measurements are made correctly and on schedule, when to shut down the pump, etc.)*

Name \_\_\_\_\_

Address \_\_\_\_\_

Company \_\_\_\_\_

Phone Number \_\_\_\_\_

**4.1b** If different from above, list the company responsible for installing the pump and discharge setup for the pumping test and/or reading and recording measurements taken during the test. *(List all responsible parties and describe the tasks they will perform. Please note that if the pump will be permanently installed, the person performing this task must possess a New Hampshire pump installers license.)*

Name \_\_\_\_\_

Address \_\_\_\_\_

Company \_\_\_\_\_

Phone Number \_\_\_\_\_

License Number \_\_\_\_\_

#### 4.2 Operation of Wells

##### 4.2a. Existing Well Operation

**4.2a.1** How will the system's existing wells be operated during the testing? Complete Table 4-1 on the next page. *(Please note that all existing wells required to meet the source capacity requirements of the system must be pumped during the testing unless data is presented that clearly demonstrates the existing wells are not hydraulically connected to the new wells. Also, the system must continue providing water from existing wells to the customers.)*

**4.2a.2.** If existing wells will be pumped at a constant rate, how will pumping rates be measured? *(Complete Table 4-2 for each well. The standard equipment is a calibrated in-line cumulative flow meter that preferably reads in gallons and is properly sized for the expected flow rate. Pumping rates must be calculated as often as water level measurements are taken, after the first 10 minutes of pumping. All cumulative flow meter readings must be recorded after the first hour of the test.)*

**Table 4-1, PROPOSED OPERATION OF EXISTING WELLS**

Well	Pumping Rate (gpm)	Operation Schedule ( <i>Constant rate, as needed, or shut off</i> )

**4.2a.3** How will constant pumping rates be maintained? Describe how the rates will be managed to offset hydraulic head changes. (*Pumping rates must be constant. Please note that documentation of totalizing meter readings might be required in the Final Report to demonstrate pumping rates have not varied more than +/- 5%. If an existing well is not necessary to demonstrate source capacity, it must be shut off or run at a constant rate during the pumping test to avoid interference with the new well.*)

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**Table 4-2, PUMPING RATE MEASUREMENTS**

Well Name/ Number	Equipment	Method	Schedule ( <i>Frequency of Measurement</i> )

**4.2b. New Well Operation.**

**4.2b.1** How will the system's new wells be operated during the testing? How will constant pumping rates be maintained? Describe how the rates will be managed to offset hydraulic head changes. (*Pumping rates must be constant. Please note that documentation of totalizing meter readings might be required in the Final Report to demonstrate pumping rates have not varied more than +/- 5%. All new wells required to meet the source capacity requirements of the system must be pumped together during the testing.*) Complete Table 4-3.

**Table 4-3, PROPOSED OPERATION OF NEW WELLS**

Well	Pumping Rate (gpm)	Constant Rate Maintenance

**4.2c.** Where will the pumped water be discharged? *(Complete Table 4-4 for each well and show the locations on the site sketch in Section 1.3d. The discharge from all wells must be directed to locations that ensure the water will flow unrestricted away from all wells, will not produce artificial well recharge, and cannot affect aquifer hydraulics. A temporary discharge permit is required for all pumping tests.)*

**TABLE 4-4, PROPOSED DISCHARGE LOCATIONS**

Well	Discharge Location*	Distance from and Name/Number of Nearest Well

\*Explain why the discharge location for each well cannot affect aquifer hydraulics.

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### **4.3 Water Level Measurement**

**4.3a.** How and when will water levels be measured in each well during pumping and recovery periods? Complete Table 4-5 for each well. *(The standard equipment is a datalogger, pressure transducer or electronic water level indicator. Water level measurements must be taken every 5 minutes for the first hour and at least once an hour thereafter. Water level measurements may be recorded more frequently, if desired. Remember to note recovery measurement frequency.)*

**Table 4-5, WATER LEVEL MEASUREMENT**

Well	Measurement Schedule ( <i>Frequency</i> )	Equipment

**4.3b. Static Water Levels.** Can existing wells be shut down before the start of the pumping test to obtain static water levels? *(Before the test, static water levels must be measured. The static water level is the well under natural, non-pumping conditions. To get accurate static water levels you need to shut down existing wells for as long as possible.)*

YES\_\_\_ NO\_\_\_

If **YES**, how long will wells be shut down and describe how water will be provided to the system during that period. *(During shut-down, water can be provided to the system from existing storage tanks.)*

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If **NO**, describe why not and how static water levels will be determined.

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#### **4.4 Monitoring of Non-System Wells**

*(You must provide an assessment in the final report of how the new wells will influence other wells within 1,000 feet. You also need to gather data to identify the effect other wells have on the water levels in your wells and to correct your data for any effect. A recently calibrated non-invasive, sonic device for measuring water levels in non-system wells is recommended, if possible.)*

Will pumping and water levels in non-system wells be monitored?

YES\_\_\_ NO\_\_\_

If **NO**, describe why not and how the impact your new wells will have on other wells will be determined and how you will separate the effects of the other wells on water levels in the wells you are testing.

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If **YES**, describe the monitoring plan for each well in Table 4-6. (*Note the locations of non-system wells on the tax map provided for section 1.3b.*) Attach an example of a letter requesting permission to monitor the non-system well(s), and a permission form that will be returned to you by the well owner with their signature authorizing monitoring.

**Table 4-6, PROPOSED MONITORING OF NON-SYSTEM WELLS**

Well	Water Level Measurement Method	Water Level Measurement Schedule ( <i>Time of day and frequency</i> )

### **Section 5.0 SUSTAINABLE YIELD EVALUATIONS**

NHDES experience shows that the evaluation of the well's yield under the rules and its impact on conducting the pumping test is often misunderstood. This has meant the applicant has had to repeat their test. To **avoid repeat testing**, NHDES asks the applicant to provide a complete description, **in their own words**, of how the sustainable yield of the new well(s) will be determined. Stabilization during the pumping test and a 180-day extrapolated estimate of drawdown are two methods for determining sustainable yield. (*Refer to Env-Dw 301 and the Field Guide for Pumping Test Operators.*) How will yield be identified for each well tested? (*Describe the criteria used to determine when to end the test and how water level data will be used to identify yield of each well in Table 5-1.*)

**Table 5-1, EVALUATION OF YIELD**

Well	Description of Yield Evaluation to be Performed

## Section 6.0 WATER QUALITY ANALYSIS

*(All new wells must be analyzed for radon plus all the parameters listed under the Safe Drinking Water Act (SDWA). These samples must be collected, while the wells are still pumping, but near the end of the pumping test. See NHDES guidance on SDWA Sampling and Reporting. **Additional sampling may be required** to evaluate contamination sources, justify a waiver, or evaluate an existing water quality problem.)*

### 6.1 Sample Collection and Delivery

**6.1a.** Who is responsible for collecting water quality samples and delivering them to the laboratory?

Name \_\_\_\_\_

**6.1b.** How will the sample be stored and transported to the laboratory? *(VOCs and bacteria samples should be kept cold.)*

\_\_\_\_\_

### 6.2 Analyses and Laboratory

**6.2a. Sample Collection and Analyses.** Provide well numbers or names, when the samples will be collected, and what parameters will be analyzed. *(Complete the Table 6-1 for each well.)*

**Table 6-1, PROPOSED WATER QUALITY MONITORING**

Well	When Sample Will be Collected	Parameters to be Analyzed

**6.2b.** What laboratory will analyze the samples and for which parameters? *(Complete Table 6-2 for each laboratory. The laboratory must have current certification in New Hampshire for performing the analyses using drinking water methods.)*

**Table 6-2, PROPOSED LABORATORY**

Laboratory	Certification Number	Analyses This Lab Will Perform

**Section 7.0 REFINEMENT OF WELLHEAD PROTECTION AREA**

*(Refer to Env-Dw 301 and the siting guide, Applicant's Toolkit, for a discussion of the standard method and reporting requirements.)*

Do you intend to use the default WHPA radii? *(Please note, small overburden wells require an analytical delineation method. This may affect how you propose your pumping test. Contact NHDES well siting staff for guidance.)*

YES \_\_\_ NO \_\_\_

**7.1** If **NO**, you need to provide a detailed proposal, including technical justification. Provide the proposal on separate sheets and include **All** of the following

**7.1a.** Map showing estimated WHPA.

**7.1b.** Description and justification for analytical groundwater delineation method.

**7.1c.** Description of additional data collection activities, including the Pumping Test Program.

**7.1d.** Description and justification of how the data will be analyzed and reported.

**7.2** If **YES**, identify the anticipated radii of the WHPAs. *(Complete the Table 7-2 for each well. The size of the WHPA will depend on the permitted production volume(s) of the well(s) and how they will be operated to meet source capacity requirements for the system.)*

**Table 7-1, WELLHEAD PROTECTION AREA RADII**

<u>Permitted Production Volume (Gal)</u>	<u>Radius (Feet)</u>
Zero to 7,200	1,300
7,201 to 14,400	1,500
14,401 to 28,800	2,050
28,801 to 43,200	2,850
43,201 to 57,599	3,600

**Table 7-2, WELLHEAD PROTECTION AREAS**

Well Name/Number	Proposed Permitted Production Volume	WHPA Radius

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**Before submitting, thoroughly check this form to be sure all questions are answered, all information is provided and all necessary attachments are included. Incomplete submittals will be returned with missing information sections highlighted.**

Preparer's Signature \_\_\_\_\_

Date \_\_\_\_\_

Note: NHDES approval should be obtained for any changes in the testing program described on this form. NHDES will review this form to determine completeness of the pumping test and water quality sampling programs and appropriateness of the well site, based on what is known at the time of the submittal. The final well siting report required by Env-Dw 301 must clearly justify any deviation in what is presented in the preliminary report.

**As a reminder, have you included the following?**

1. USGS map and tax map.
2. Flood Hazard Map.
3. Site map showing well locations, SPAs, surface waters, wetlands, roads, buildings, ground contours, stormwater drainage structures, pumping test discharge location, and all other features within 1000' of the well(s).
4. A GIS Map and inventory.
5. Windshield survey worksheet.
6. File review worksheet.
7. Source capacity calculations.
8. Wellhead Protection Area map.
9. Description of the analytical groundwater method, if used, and all attendant documentation.
10. Water Conservation Plan.
11. List of public & private well owners within 1,000feet.
12. Example of letter requesting permission for monitoring non-system wells and permission form.

## Worksheet A Calculation Sheet for Source Capacity Requirements

### Step 1. Calculate Source Capacity Required for Residential Uses

Identify Non-Senior Housing

- a. Number of service connections \_\_\_\_\_
- b. Number of bedrooms per connection \_\_\_\_\_

Calculate

- a. Design Flow ( \_\_\_\_\_ ) x ( \_\_\_\_\_ ) x (150gpd/bdrm) = \_\_\_\_\_ gpd  

No. Connections
No. Bdrms/Connection
- b. Source Capacity ( \_\_\_\_\_ ) x ( 2 ) = \_\_\_\_\_ gpd  

Design Flow
Source Capacity

**OR**

Identify Senior Housing

- a. Number of service connections \_\_\_\_\_
- b. Number of bedrooms per connection \_\_\_\_\_

Calculate

- a. Design Flow ( \_\_\_\_\_ ) x ( \_\_\_\_\_ ) x (150gpd/1-bdrm units/100 gpd/2-bdrm units) = \_\_\_\_\_ gpd  

No. Connections
No. Bdrms/Connection
- b. Source Capacity ( \_\_\_\_\_ ) x ( 2 ) = \_\_\_\_\_ gpd  

Design Flow
Source Capacity

### Step 2. Calculate Source Capacity Required for all Non-Residential & Irrigation Uses.

Use #1. Irrigation.

Number of Structures \_\_\_\_\_

Calculate

- Source Capacity ( \_\_\_\_\_ ) x ( 700 or 1,200 ) = \_\_\_\_\_ gpd  

No. Structures
Flow/Structure

Use #2. Type of Use \_\_\_\_\_

Number of Units (i.e., bedrooms, seats, sites, etc.) \_\_\_\_\_

Calculate

- a. Design Flow ( \_\_\_\_\_ ) x ( \_\_\_\_\_ ) = \_\_\_\_\_ gpd  

No. Units
Flow/Unit
- b. Source Capacity ( \_\_\_\_\_ ) x ( \_\_\_\_\_ ) = \_\_\_\_\_ gpd (Use #2)  

Design Flow
Multiplier from 372.11
Source Capacity
  

Design Flow
Multiplier from 372.11
Source Capacity

### Step 3. Calculate Total Source Capacity Required for Water System

*(Total capacity is all residential and all non-residential uses)*

Add all Source Capacity calculated in Step 1 and Step 2 above

- ( \_\_\_\_\_ ) + ( \_\_\_\_\_ ) + ( \_\_\_\_\_ ) + ( \_\_\_\_\_ ) = \_\_\_\_\_ gpd  

Residential
Use #1
Use #2
Use #3
Total System Source Capacity

## Worksheet B Waiver Application

Project Name \_\_\_\_\_ Town/City \_\_\_\_\_  
Date \_\_\_\_\_

Which section of the **rule** are you requesting be waived? Env-Dw 301. \_\_\_\_\_.

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Explain what, specifically, needs to be waived at this well site. Provide diagrams where helpful.

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Describe what hardship would be caused if the rule were adhered to.

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Explain the alternative solution in detail. Provide diagrams where helpful.

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Explain how the alternative is consistent with the intent of the rules.

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Explain how the alternative would adequately protect human health and the environment.

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## Worksheet C

### Worksheet for Reporting on Windshield Survey

Water System Name \_\_\_\_\_

Date \_\_\_\_\_

**Table 1. Potential Contamination Sources Found**

Business Name or Resident	Land Use	Address	Location Marked on Map?

Note Make copies of this form if you identify more sites.

**Table 2. Activities on the NHDES GIS Inventory that are no longer PCSs**

Business Name or Resident	Address	Old PCS Activity (from GIS Inventory)	New Non-PCS Activity (from windshield survey)

**Table 3. Contact with Local Officials and Property Owners**

*(May not be necessary, if water supplier has long-term knowledge of local land uses and can provide appropriate information.)*

Examples of Local Officials You Could Contact	Person Contacted & Date of Contact	Incident or Land Use Identified*	Address	Location Marked on Map?
Health Officer				
Fire Department				
Zoning Enforcement				
Town Clerk				
Tax Assessor				
Building Owner				

\*Add sheets if needed to describe Incident or Land Use